

WHAT IS CLAIMED IS:

1. A method for creating a digital image file from a developing film, comprising:
 - applying developer to film to cause the film to begin to develop.
 - moving the developing film through a first scanning module adapted to create a first digital image of the film during a first film development time;
 - moving the developing film through a second scanning module adapted to create a second digital image of the film during a second film development time; and
 - moving the film through an opening between the first and second modules.
2. The method as recited in claim 1, further comprising:
 - combining the first and second digital image files to form a combined image file representing an image on the frame.
3. The method as recited in claim 1, further comprising:
 - opening a trap door between the first and second modules to create the opening.
4. The method as recited in claim 3, wherein the trap door is opened automatically upon sensing that the film has reached a predetermined position.
5. A digital film development transport system, comprising:
 - a film support adapted to support developing film;
 - a drive mechanism adapted to move the developing film over the film support; and
 - a trap door mechanism adjacent to the film support and adapted to move between a closed position configured to allow film to travel over the trap door mechanism and an open position configured to allow film to travel through an opening.
6. The system as recited in claim 5, wherein the trap door mechanism comprises a hinge, the trap door mechanism being rotatable about the hinge.

7. The system as recited in claim 5, further comprising a film channel assembly positioned beneath the opening and adapted to contain film in a channel defined by the film channel assembly.

8. The system as recited in claim 5, further comprising:

- an actuator adapted to control the position of the trap door mechanism;
- a controller adapted to control the actuator upon detecting a position of the film.

9. The system as recited in claim 5, further comprising:

a film guide arm adapted to contact the film when the trap door mechanism is in the open position.

10. A method for creating a digital image file from a developing film, comprising:

- applying developer to film to cause the film to begin to develop;
- placing the developing film in tension;
- applying radiation to a frame on the tensioned film during a first development time;
- sensing first radiation from the frame during the first development time; and
- creating a first digital image file using the sensed first radiation.

11. The method as recited in claim 10, wherein the film is placed in tension by the steps comprising:

- rotating a first roller mechanism at a first speed;
- contacting the film with the first roller mechanism;
- rotating a second roller mechanism at a second speed; and
- contacting the film with the second roller mechanism;
- wherein the first speed is faster than the second speed.

12. The method as recited in claim 10, further comprising:

- forming the film into an arcuate shape.

13. The method as recited in claim 10, wherein the first radiation comprises radiation reflected from the front of the film, radiation reflected from the back of the film, and radiation transmitted through the film.

14. A mechanism for tensioning film for scanning, comprising:

a first transport element adapted to contact the film and to move at a first speed;

a second transport element spaced from the first transport element, wherein the second transport element is adapted to contact the film and to move at a second speed;

wherein the first and second transport elements are adapted to tension the film therebetween.

15. The mechanism as recited in claim 14, further comprising:

a drive mechanism adapted to impart rotation to at least one of the first and second transport elements.

16. The mechanism as recited in claim 15, further comprising:

a slip device configured to disengage at least one of the first and second transport elements upon a torque overload.

17. The mechanism as recited in claim 14, further comprising:

an arcuate film bridge configured to form the tensioned film into an arcuate shape.

18. A modular digital film development system, comprising:

a first film scanning module including a first mounting member holding:

a film guide assembly adapted to receive developing film, a source of radiation,

and a sensor adapted to sense radiation from the developing film; and

a second film scanning module including a second mounting member holding:

a film guide assembly adapted to receive developing film from the first module,

a source of radiation, and a sensor adapted to sense radiation from the developing film;

wherein the first and second mounting members are separable members.

19. The modular digital film development system as recited in claim 18, wherein the first and second modules are substantially identical.

20. The modular digital film development system as recited in claim 18, further comprising:
a frame connected to the first and second mounting members.

21. A method for creating a digital image file from a developing film, comprising:
attaching a leader strip to a lead edge of the film;
threading the leader strip and attached film through first and second scanning modules,
wherein the scanning modules are separable;
attaching tape to the film such that the tape extends from a film side edge;
applying developer to the film to cause the film to begin to develop;
contacting the tape with belts and moving the belts to move the tape and attached film
through the first scanning module;
scanning the film using the first scanning module to create a first digital image of the film
during a first film development time, wherein the film is placed in tension during the scanning;
moving the film through an opening between the first and second modules; and
scanning the film using the second scanning module to create a second digital image of
the film during a second film development time.

22. In a film processing system, a system for transporting strip of photographic film,
comprising:

(a) a processing unit, the processing unit having a process space for
processing the photographic film;

(b) a first pair of belts spaced by a selected distance and extending along a
process path through the processing space of the processing unit, the first
pair of belts being spaced and adapted to contact opposite lateral portions
of a first side of a film strip without contacting a central portion of the

10

first side of the film strip between the opposite lateral portions of the first side;

15

- (c) a second pair of spaced belts spaced by the predefined distance and extending along the process path through the processing space of the processing units, the second pair of belts spaced and adapted to contact lateral portions of a second side of the film strip without contacting a central portion of the film strip between the opposite lateral portions of the second side; and

20

- (d) a drive assembly for moving the first and second sets of belts through the process space in unison, the first and second pairs of belts being arranged so that one of the belts in the first pair cooperates with a corresponding belt in the second pair to capture one of the lateral portions of the film and the other one of the belts in the first pair cooperates with a corresponding belt in the second pair to capture the other of the lateral portions of the film, the first and second sets of belts jointly transporting the interposed film strip along the process path without contacting the central portion of the film.

23. A film processing system as recited in claim 22 wherein the processing unit includes a radiation source and a sensor adapted to sense radiation from the film, the sensor being in communication with the radiation source via reflected or transmitted radiation from the film.

24. An apparatus for transporting a film strip having first and second sides through an scanning assembly, comprising:

a light source for passing light through a film strip as the film strip is passed through the scanning assembly;

a control surface operative to control the position and orientation of the film strip as the film strip is moved through the scanning assembly; and

a belt assembly including at least one movable belt operative to engage a first surface of a film strip and to urge the film strip against the control surface, the belt assembly and the control surface being jointly operative to capture an interposed film strip and move the interposed film strip in a predetermined orientation and position relative to the scanning assembly.

25. An apparatus as recited in claim 24 wherein the control surface is movable and moves in timed relationship with the belt.

26. An apparatus as recited in claim 24 wherein the belt assembly includes a first set of belts contacting the first surface of a film strip and a second set of belts contacting a second surface of the film strip.

27. A method of presenting a portion of a film strip to an imaging station, comprising the steps of:

- (a) urging a portion of a film strip against an arcuate control surface;
- (b) rotating the control surface to move the portion of the film strip to a scanning location;
- (c) subjecting a portion of the film strip to a radiation source at the scanning location; and

(d) sensing radiation from the film strip at the scanning location.

28. A method as recited in claim 27 wherein the imaging station includes at least one belt moving in timed relationship to the rotating control surface and wherein the at least one belt is used to urge a portion of the film strip against the arcuate control surface .

29. A method for transporting film through a scanning system, the method comprising the steps of:

attaching a tape strip to a film strip such that a portion of the tape extends from a side edge of the film strip;

engaging the portion of the tape strip extending from the side edge of the film strip to move the tape strip and attached film strip; and

scanning the film strip attached to the tape strip to create a first digital image file.

30. The method as recited in claim 29, wherein the tape strip is engaged near at least one side edge of the tape strip.

31. The method as recited in claim 29, wherein the tape strip is engaged by a roller mechanism.

32. The method as recited in claim 29, wherein the tape strip has a width larger than 35 mm.

33. The method as recited in claim 29, wherein the attaching step comprises:

attaching a first tape strip to a first side edge of the film strip such that the first tape strip extends outwardly from the first side edge; and

attaching a second tape strip to a second side edge of the film strip such that the second tape strip extends outwardly from the second side edge.

34. The method as recited in claim 29, wherein the digital image file is created as the film is developing.

35. The method as recited in claim 29 further comprising:

scanning the film strip to create a second digital image file; and
combining the first and second digital image files to create a combined image file
representing an image on the film strip.

36. A digital film development system, comprising:

a tape strip;

a film strip attached to the tape strip;

a transport mechanism adapted to contact the tape strip and to move the tape strip and the
5 attached film strip;

a source of radiation adapted to apply radiation to the film strip; and

a sensor adapted to sense radiation from the film strip and to create a digital image file
of an image on the film strip.

37. The system as recite in claim 36, wherein the film strip is more narrow than the tape strip.

38 . The system as recited in claim 36, wherein the tape strip is substantially invisible to the
radiation.

39 . The system as recited in claim 36, wherein the sensed radiation comprises radiation reflected
from the front of the film strip, radiation reflected from the back of the film strip, and radiation
transmitted through the film strip.

40 . A method for creating an image from film, the method comprising the steps of :

attaching a trailing edge of a leader strip to a leading edge of a film strip;

threading the leader strip through a film transport system;

using the film transport system to move the leader and attached film;

5 applying developer to the film to cause the film to begin to develop;

applying radiation to the developing film; and

sensing radiation from the developing film.

41 . The method as recited in claim 40, further comprising:

attaching a leading edge of the leader strip to a trailing edge of the film strip to form a continuous loop.

42. The method as recited in claim 41, further comprising:

attaching a leading edge of a second leader strip to the trailing edge of the film strip.

43. A digital film development system, comprising:

a splicer configured to attach a leader strip to a film strip;

a film transport system configured to move the leader strip and attached film strip;

a developer dispenser adapted to apply developer to the film strip;

a radiation source configured to apply radiation to the developing film; and

a sensor adapted to sense radiation from the developing film and to create a digital image file from the sensed radiation.

44. The digital film development system as recited in claim 43, further comprising:

a second radiation source configured to apply radiation to the developing film during a second film development time;

a second sensor adapted to sense radiation from the developing film during the second film development time and to create a second digital image file from the sensed radiation; and

an image processor adapted to combine the first and second digital image files into a final digital image file.

45. A film transport system comprising:

a photographic film strip having sprocket holes near opposing edges of the film strip;

a leader strip narrower than the photographic film strip and attached to a lead end of the photographic film strip;

a pair of oppositely disposed sprockets having teeth engaging the sprocket holes on the photographic film strip; and

a roller connecting the sprockets and supporting the leader strip.

46. The transport mechanism as recited in claim 45, wherein the roller has an arcuate surface.

47. The transport mechanism as recited in claim 45, wherein the roller is adapted to automatically center the leader strip.

48. A digital film development system, comprising:

- a developer dispenser configured to apply developer to a film;
- a source configured to apply radiation to the developing film;
- a sensor configured to sense radiation from the developing film; and
- a single drive mechanism adapted to move the developing film past the source and sensor.

49. The system as recited in claim 48, wherein the single drive mechanism comprises:

- a motor; and
- a roller configured to rotate by movement of the motor.

50. The system as recited in claim 49, wherein the single drive mechanism is configured to pull the film past the source and sensor..

51. The system as recited in claim 48, wherein the drive mechanism comprises a capstan drive.

52. The system as recited in claim 48, further comprising:

- a resistance mechanism spaced from the drive mechanism and adapted to contact the film and provide resistance to the movement of the developing film such that the film is tensioned between the drive mechanism and the resistance mechanism.